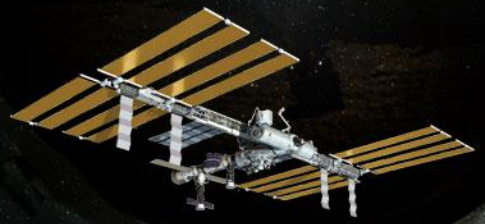
Human Exploration & Operations Mission Directorate

Life and Physical Sciences Division

Division Director: D. Marshall Porterfield

NASA Advisory HEO Committee Report

July 23rd, 2012



Research for Human Exploration

Space Life and Physical Sciences Research and Applications Division

- **NASA's Space Life and Physical Sciences Research and Applications Division (SLPSRA) has been formulated to execute high quality, high value research and application activities in the areas of:**
  - Space Life Sciences
  - Physical Sciences
  - Human Research
- **These programs conduct research and develop technologies that will allow humans to travel safely and productively in the environment of space.**
- **SLPSRA serves as the agency liaison with the ISS National Laboratory management organization.**

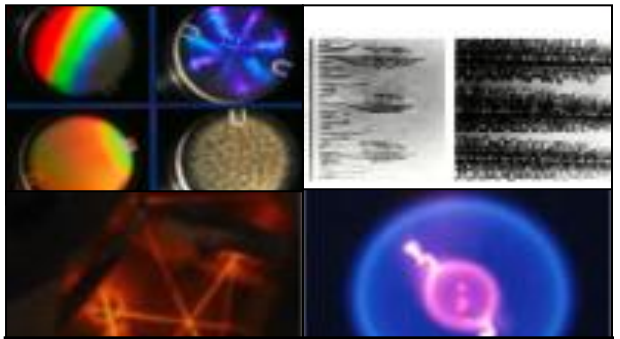
SLPSRA Research and Application Focus Areas

Space Life Sciences

- Uses the space environment to enhance understanding of the response of living organisms and biological processes to weightlessness.
- Works toward an understanding of the requirements of terrestrial life in non-Earth environments

Human Research

- Develops scientific and technological foundations for a safe, productive human presence in space for extended periods.
- Focuses on investigating and mitigating the highest risks to human health and performance in order to enable safe, reliable, and productive human space exploration.



Physical Sciences

- Conducts fundamental and applied research in space to explore the processes that form materials and determine the performance of fluid, thermal, and combustion systems.
- Builds engineering knowledge to enable the design of fluid, thermal, and chemical process devices for space environments

- Applies this knowledge and technology to improve our nation's competitiveness, education and the quality of life on Earth.

Status of the HEO Research Subcommittee

Initially discussed at November 2011 HEO committee meeting

Recommendation to establish a research subcommittee made by the NAC at the March 2012 meeting

Recommendation accepted by NASA

Establishment of subcommittee pending permanent research division leadership to identify key issues and membership for the subcommittee

New division director official starting date August 1, 2012

Discussions with Dr. Longnecker regarding subcommittee membership are in work. Other potential members have been identified and the LPS program executives have been queried.

As presented in November 2011 - Proposed LPS Advisory Subcommittee

Near-term objective will be to advise on the tactical implementation of strategic guidance, e.g. from the NRC

Primary long-term function will be to advise HEOMD on the development of a stable research community and research program that will effectively support future exploration missions in multiple dimensions

Recommended composition of the committee would support long-range exploration and research objectives – individuals who understand LPS content, but who represent a breadth of perspectives on exploration, research, and higher education rather than specific discipline interests

Status of the ISS Nation Lab management organization

The Center for the Advancement of Science in Space (CASIS) was awarded a cooperative agreement to manage non-NASA utilization of the ISS on August 31, 2011.

Jeanne Becker, initial executive director, resigned on March 5, 2012

Jim Royston appointed interim executive director

CASIS ad hoc science team reviewed life sciences flight experiments for near-term commercial potential. Identified rodent model of bone demineralization and growth of biomolecular crystals for x-ray structural analysis as two top candidates

Initial solicitation for crystal growth is currently open. Proposals due August 15.

CASIS Board of Directors process nearing conclusion – new board expected next month

New Executive Director to be selected by the new board from 5-6 final candidates identified by a search firm